

IN THE CLAIMS

Please add new claims 12-54.

1. (Original) A method of encoding images including areas (11) of relevant image data and areas (12) of irrelevant image data, comprising the step of identifying (2) said irrelevant image data, characterized by replacing (4) at least irrelevant image data next to a boundary (13) between said areas by pseudo-image data smoothing the transition between relevant and irrelevant image data.

2. (Original) A method as claimed in Claim 1, characterized by detecting (2) and encoding (3) the boundary between said areas.

3. (Original) An encoder for encoding images including areas (11) of relevant image data and areas (12) of irrelevant image data, comprising means (2) for identifying said irrelevant image data, characterized by means (4) for replacing at least irrelevant image data next to a boundary (13) between said areas by pseudo-image data smoothing the transition between relevant and irrelevant image data.

4. (Original) An encoder as claimed in Claim 3, characterized by means (2) for detecting and means (3) for encoding the boundary between said areas.

5. (Original) A method of decoding images including areas (11) of relevant image data and areas (12) of irrelevant image data, characterized by identifying (8) pseudo-image data in response to boundary information and replacing (9) said pseudo-image data by predetermined image data.

6. (Original) A method as claimed in Claim 5, characterized by receiving (8) encoded boundary information and decoding (8) said boundary information.

7. (Original) A decoder for decoding images including areas (11) of relevant image data and areas (12) of irrelevant image data, characterized by means (8) for identifying pseudo-image data in response to boundary information and means (9) for replacing said pseudo-image data by predetermined image data.

8. (Original) A decoder as claimed in Claim 7, characterized by means (8) for receiving encoded boundary information and means (8) for decoding said boundary information.

9. (Original) An encoded image signal representing an image including areas of relevant image data and areas of irrelevant image data, characterized in that the irrelevant image data has been replaced by pseudo-image data smoothing the transition between relevant and irrelevant image data.

10. (Original) An image signal as claimed in Claim 9, further including boundary information (B) defining the boundary between said areas.

11. (Original) A digital storage medium (6) on which a signal as claimed in Claim 9 or 10 is stored.

Please add the following new claims:

12. (New) Method of transmitting or recording an encoded image signal, the method comprising encoding images including areas (11) of relevant image data and areas (12) of irrelevant image data to obtain the encoded image signal, the encoding comprising the steps of:

identifying (2) said irrelevant data,

replacing at least irrelevant image data next to a boundary between the relevant and the irrelevant image data with pseudo image data and smoothes a transition between the relevant and irrelevant image data; and

encoding the images that include the pseudo-image data but not the irrelevant image data.

13. (New) Method of transmitting or recording as claimed in claim 12, wherein the encoding comprises detecting (2) and encoding (3) the boundary between said areas to obtain encoded boundary information (B) which is transmitted or recorded.

14. (New) An apparatus for transmitting or recording an encoded image signal, the apparatus comprising an encoder for encoding images including areas (11) of relevant image data and areas (12) of irrelevant image data to obtain the encoded image signal, the encoder comprising:

means for identifying (2) said irrelevant data,

means for replacing at least irrelevant image data next to a boundary between the relevant and irrelevant image data with pseudo image data that smoothes a transition between the relevant and irrelevant image data; and

means for encoding the images that include the pseudo-image data but not the irrelevant image data.

15. (New) An apparatus for transmitting or recording as claimed in claim 14, wherein the encoder comprises means for detecting (2) and means for encoding (3) the boundary between said areas to obtain encoded boundary information (B) which is transmitted or recorded.

16. (New) Method of receiving an encoded image signal, the encoded image signal representing an image including areas of relevant image data and areas of irrelevant data, the method of receiving comprising:

receiving the relevant image data and pseudo image data but not the irrelevant image data;

identifying (8) the pseudo-image data in the images based on received boundary information for the images; and

replacing said pseudo image data with predetermined image data,
wherein the pseudo-image data smooth a transition between the relevant and irrelevant image data in the images.

17. (New) Method of receiving as claimed in claim 16, comprising receiving (8) encoded boundary information and decoding (8) said boundary information.

18. (New) A receiver for receiving an encoded image signal, the encoded image signal representing an image including areas of relevant image data and areas of irrelevant data, the receiver comprising:

means for receiving the relevant image data and pseudo image data but not the irrelevant image data;

means for identifying (8) the pseudo image data in the images based on received boundary information for the images; and

means for replacing said pseudo image data with predetermined image data,

wherein the pseudo image data smoothes a transition between the relevant and irrelevant image data in the images.

19. (New) A receiver as claimed in claim 18 comprising means for receiving (8) encoded boundary information and means for decoding (8) said boundary information.

20. (New) A system comprising an apparatus as claimed in claim 14 and a receiver as claimed in claim 18.

21. (New) A method of encoding images including areas (11) of relevant image data and areas (12) of irrelevant image data, the encoding comprising the steps of:

identifying (2) said irrelevant data,

replacing at least irrelevant image data next to a boundary between the relevant and the irrelevant image data with pseudo image data that smoothes a transition between the relevant and irrelevant image data;

encoding the images that include the pseudo-image data but not the irrelevant image data, and

detecting (2) and losslessly encoding (3) the boundary between said areas.

22. (New) A method of encoding images including areas (11) of relevant image data and areas (12) of irrelevant image data, the encoding comprising the steps of:

identifying (2) said irrelevant data,

replacing at least irrelevant image data next to a boundary between the relevant and the irrelevant image data with

pseudo image data that smoothes a transition between the relevant and irrelevant image data; and

encoding the images that include the pseudo-image data but not the irrelevant image data, wherein the encoding is a block-based transform encoding.

23. (New) A method of encoding images including areas (11) of relevant image data and areas (12) of irrelevant image data, the encoding comprising the steps of:

identifying (2) said irrelevant data,

replacing at least irrelevant image data next to a boundary between the relevant and the irrelevant image data with pseudo-image data that smoothes a transition between the relevant and irrelevant image data; and

encoding the images that include the pseudo-image data but not the irrelevant image data,

wherein a value of the pseudo-image data corresponds to a first relevant pixel beyond the boundary.

24. (New) A method of encoding images including areas (11) of relevant image data and areas (12) of irrelevant image data, the encoding comprising the steps of;

identifying (2) said irrelevant data,

replacing at least irrelevant image data next to a boundary between the relevant and the irrelevant image data with pseudo image data that smoothes a transition between the relevant

and irrelevant image data; and

encoding the images that include the pseudo-image data
but not the irrelevant image data,

wherein pseudo-pixels are chosen that gradually vary from
an original value zero to a value of a first relevant pixel beyond
the boundary.

25. (New) Method of encoding images including areas (11) of
relevant image data and areas (12) of irrelevant image data, the
encoding comprising the steps of:

identifying (2) said irrelevant data,

replacing at least irrelevant image data next to a
boundary between the relevant and the irrelevant image data with
pseudo image data that smoothes a transition between the relevant
and irrelevant image data; and

encoding the images that include the pseudo-image data
but not the irrelevant image data,

wherein the relevant image signal portion is mirrored
into the irrelevant area.

26. (New) A method of encoding images including areas (11) of
relevant image data and areas (12) of irrelevant image data, the
encoding comprising the steps of;

identifying (2) said irrelevant data,

replacing at least irrelevant image data next to a
boundary between the relevant and the irrelevant image data with

pseudo image data that smoothes a transition between the relevant and irrelevant image data; and

encoding the images that include the pseudo-image data but not the irrelevant image data,

wherein pseudo pixels are obtained by extrapolating pixels of the relevant area into the irrelevant area.

27. (New) Method of encoding as claimed in claim 26, wherein the extrapolating comprises choosing a block including an irrelevant pixel and replacing the irrelevant pixel by a pseudo-pixel having an average value of all other pixels in the block.

28. (New) A method of encoding images including areas (11) of relevant image data and areas (12) of irrelevant image data, the encoding comprising the steps of:

identifying (2) said irrelevant data,

replacing at least irrelevant image data next to a boundary between the relevant and the irrelevant image data with pseudo image data that smoothes a transition between the relevant and irrelevant image data; and

encoding the images that include the pseudo-image data but not the irrelevant image data,

wherein the pseudo-signal portion is low-pass filtered to further smooth the transition.

29. (New) Method of encoding images including areas (11) of relevant image data and areas (12) of irrelevant image data to obtain the encoded image signal, the encoding comprising the steps of:

identifying (2) said irrelevant data,

replacing at least irrelevant image data next to a boundary between the relevant and the irrelevant image data with pseudo image data that smoothes a transition between the relevant and irrelevant image data; and

encoding the images that include the pseudo-image data but not the irrelevant image data,

wherein the method of encoding comprises;

dividing a video image into image blocks, some image blocks comprising relevant pixels only, other blocks comprising both relevant image data and irrelevant image data,

replacing the irrelevant pixels by pseudo-pixels, and

subjecting the image blocks to an orthogonal transform such as a Discrete Cosine Transform.

30. (New) An encoder for encoding images including areas (11) of relevant image data and areas (12) of irrelevant image data, the encoder comprising:

means for identifying (2) said irrelevant data,

means for replacing at least irrelevant image data next to a boundary between the relevant and the irrelevant image data with pseudo image data that smoothes a transition between the

relevant and irrelevant image data;

means for encoding the images that include the pseudo-image data but not the irrelevant image data, and

means for detecting (2) and means for losslessly encoding (3) the boundary between said areas.

31. (New) An encoder for encoding images including areas (11) of relevant image data and areas (12) of irrelevant image data, the encoder comprising:

means for identifying (2) said irrelevant data,

means for replacing at least irrelevant image data next to a boundary between the relevant and the irrelevant image data with pseudo image data that smoothes a transition between the relevant and irrelevant image data; and

means for encoding the images that include the pseudo-image data but not the irrelevant image data,

wherein the encoder is a block-based transform encoder.

32. (New) An encoder for encoding images including areas (11) of relevant image data and areas (12) of irrelevant image data, the encoder comprising:

means for identifying (2) said irrelevant data,

means for replacing at least irrelevant image data next to a boundary between the relevant and the irrelevant image data with pseudo image data that smoothes a transition between the relevant and irrelevant image data; and

means for encoding the images that include the pseudo-image data but not the irrelevant image data,

wherein a value of the pseudo-image data corresponds to a first relevant pixel beyond the boundary.

33. (New) An encoder for encoding images including areas (11) of relevant image data and areas (12) of irrelevant image data, the encoder comprising:

means for identifying (2) said irrelevant data,

means for replacing at least irrelevant image data next to a boundary between the relevant and the irrelevant image data with pseudo image data that smoothes a transition between the relevant and irrelevant image data; and

means for encoding the images that include the pseudo-image data but not the irrelevant image data,

wherein a pseudo-pixels are chosen that gradually vary from an original value zero to a value of a first relevant pixel beyond the boundary.

34. (New) An encoder for encoding images including areas (11) of relevant image data and areas (12) of irrelevant image data, the encoder comprising:

means for identifying (2) said irrelevant data,

means for replacing at least irrelevant image data next to a boundary between the relevant and the irrelevant image data with pseudo image data that smoothes a transition between the

relevant and irrelevant image data, and

means for encoding the images that include the pseudo-image data but not the irrelevant image data,

wherein the relevant image signal portion is mirrored into the irrelevant area.

35. (New) An encoder for encoding images including areas (11) of relevant image data and areas (12) of irrelevant image data, the encoder comprising:

means for identifying (2) said irrelevant data,

means for replacing at least irrelevant image data next to a boundary between the relevant and the irrelevant image data with pseudo image data that smoothes a transition between the relevant and irrelevant image data; and

means for encoding the images that include the pseudo-image data but not the irrelevant image data,

wherein pseudo pixels are obtained by extrapolating pixels of the relevant area into the irrelevant area.

36. (New) An encoder for encoding images including areas (11) of relevant image data and areas (12) of irrelevant image data, the encoder comprising:

means for identifying (2) said irrelevant data,

means for replacing at least irrelevant image data next to a boundary between the relevant and the irrelevant image data with pseudo image data that smoothes a transition between the

relevant and irrelevant image data; and

means for encoding the images that include the pseudo-image data but not the irrelevant image data,

wherein the pseudo-signal portion is low-pass filtered to further smooth the transition.

37. (New) An encoder for encoding images including areas (11) of relevant image data and areas (12) of irrelevant image data to obtain the encoded image signal, the encoder comprising:

means for identifying (2) said irrelevant data,

means for replacing at least irrelevant image data next to a boundary between the relevant and the irrelevant image data with pseudo image data that smoothes a transition between the relevant and irrelevant image data; and

means for encoding the images that include the pseudo-image data but not the irrelevant image data,

wherein the encoder comprises:

means for dividing a video image into image blocks, some image blocks comprising relevant pixels only, other blocks comprising both relevant image data and irrelevant image data,

means for replacing the irrelevant pixels by pseudo-pixels, and

means for subjecting the image blocks to an orthogonal transform such as a Discrete Cosine Transform.

38. (New) An apparatus for transmitting or recording, the apparatus comprising an encoder according to any of the claims 30-37.

39. (New) A method of decoding images including areas (11) of relevant image data and areas (12) of irrelevant image data, the method comprising:

receiving the relevant image data and pseudo image data but not the irrelevant image data;

identifying (8) the pseudo-image data in the images based on received boundary information for the images; and

replacing said pseudo image data with predetermined image data,

wherein the pseudo-image data smoothes a transition between the relevant and irrelevant image data in the images,

wherein said predetermined image data are predetermined background pixels.

40. (New) A method of decoding images including areas (11) of relevant image data and areas (12) of irrelevant image data, the method comprising:

receiving the relevant image data and pseudo image data but not the irrelevant image data;

identifying (8) the pseudo-image data in the images based on received boundary information for the images; and

replacing said pseudo image data with predetermined image data,

wherein the pseudo-image data smoothes a transition between the relevant and irrelevant image data in the images,
the decoding comprising an inverse block-based transform operation such as an Inverse Discrete Cosine Transform to obtain reconstructed pixels prior to said identifying step.

41. (New) A method of decoding images including areas (11) of relevant image data and irrelevant image data, the method comprising:

receiving the relevant image data and pseudo image data but not the irrelevant image data;

receiving losslessly encoded boundary information and decoding (8) said boundary information,

identifying (8) the pseudo-image data in the images based on the received boundary information for the images; and

replacing said pseudo image data with predetermined image data,

wherein the pseudo-image data smooth a transition between the relevant and irrelevant image data in the images.

42. (New) A decoder for decoding images including areas (11) of relevant image data and areas (12) of irrelevant image data, the decoder comprising:

means for receiving the relevant image data and pseudo image data but not the irrelevant image data;

means for identifying (8) the pseudo-image data in the

images based on received boundary information for the images; and
means for replacing said pseudo image data with
predetermined image data,

wherein the pseudo-image data smooth a transition between
the relevant and irrelevant image data in the images,

wherein said predetermined image data are predetermined
background pixels.

43. (New) A decoder for decoding images including areas (11) of
relevant image data and areas (12) of irrelevant image data, the
decoder comprising:

means for receiving the relevant image data and pseudo
image data but not the irrelevant image data;

means for identifying (8) the pseudo-image data in the
images based on received boundary information for the images; and

means for replacing said pseudo image data with
predetermined image data,

wherein the pseudo-image data smooth a transition between
the relevant and irrelevant image data in the images,

the decoder comprising means for performing an inverse
block-based transform operation such as an Inverse Discrete Cosine
Transform to obtain reconstructed pixels prior to said identifying
step.

44. (New) A decoder for decoding images including areas (11) of
relevant image data and irrelevant image data, the decoder

comprising:

means for receiving the relevant image data and pseudo image data but not the irrelevant image data;

means for identifying (8) the pseudo-image data in the images based on received boundary information for the images; and

means for replacing said pseudo image data with predetermined image data,

wherein the pseudo-image data smooth a transition between the relevant and irrelevant image data in the images,

wherein the decoder comprises means for receiving losslessly encoded boundary information and means for decoding (8) said boundary information.

45. (New) A receiver comprising a decoder as claimed in any of the claims 42-44.

46. (New) A system for encoding and decoding video images, the system comprising an apparatus as claimed in claim 38 and a receiver as claimed in claim 45.

47. (New) An encoded image signal that represents an image that includes areas of relevant image data and areas of irrelevant data, wherein, in the encoded signal, at least some of the irrelevant data has been replaced by pseudo-image data that smoothes a transition between relevant image data at boundaries between relevant and irrelevant data, which signal includes losslessly

encoded boundary information (B) defining the boundary between said areas.

48. (New) An encoded image signal that represents an image that includes areas of relevant image data and areas of irrelevant data, wherein, in the encoded signal, at least some of the irrelevant data has been replaced by pseudo-image data that smoothes a transition between relevant image data at boundaries between relevant and irrelevant data, wherein the image has been encoded by a block-based transform encoding.

49. (New) An encoded image signal that represent an image that includes areas of relevant image data and areas of irrelevant data, wherein, in the encoded signal, as least some of the irrelevant data has been replaced by pseudo-image data that smoothes a transition between relevant image data at boundaries between relevant and irrelevant data, wherein a value of the pseudo-image data corresponds to a first relevant pixel beyond the boundary.

50. (New) An encoded image signal that represents an image that includes areas of relevant image data and areas of irrelevant data, wherein, in the encoded signal, at least some of the irrelevant data has been replaced by pseudo-image data that smoothes a transition between relevant image data at boundaries between relevant and irrelevant data, wherein a pseudo-pixels have been chosen that gradually vary from an original value zero to a value

of a first relevant pixel beyond the boundary.

51. (New) An encoded image signal that represents an image that includes areas of relevant image data and areas of irrelevant data, wherein, in the encoded signal, at least some of the irrelevant data has been replaced by pseudo-image data that smoothes a transition between relevant image data at boundaries between relevant and irrelevant data, wherein the relevant image signal portion has been mirrored into the irrelevant area.

52. (New) An encoded image signal that represents an image that includes areas of relevant image data and areas of irrelevant data, wherein, in the encoded signal, as least some of the irrelevant data has been replaced by pseudo-image data that smoothes a transition between relevant image data at boundaries between relevant and irrelevant data, wherein pseudo pixels have been obtained by extrapolating pixels of the relevant area into the irrelevant area.

53. (New) An encoded image signal that represents an image that includes areas of relevant image data and areas of irrelevant data, wherein, in the encoded signal, at least some of the irrelevant data has been replaced by pseudo-image data that smoothes a transition between relevant image data at boundaries between relevant and irrelevant data, wherein the pseudo-signal portion has been low-pass filtered to further smooth the transition.

54. (New) A digital storage medium (6) on which a signal as claimed in any of the claims 48-53 has been stored.